IN THE CLAIMS:

Please amend claims 1 and 10-11, and add new claims 21-23 as follows:

1. (Currently Amended) A semiconductor integrated circuit for power supply control for performing switching control of a switching power supply device which switches currents flowing through a primary coil of a transformer for voltage conversion to drive the primary coil with alternate currents and rectifies currents flowing through a secondary coil of the transformer to output DC voltages,

wherein the semiconductor integrated circuit generates and outputs a control signal for dynamically controlling off-timings of a transistor for synchronous rectification at the secondary coil in accordance with at least one of an input voltage of the primary coil and a load current of the secondary coil to turn off the transistor immediately before inverting a current direction flowing through the primary coil so as to minimize switching power losses,

timings of the control signal are variably delayed at delay amounts by a variable delay circuit, and

said delay amounts are generated by a delay amount control circuit based upon setup information.

2. (Original) The semiconductor integrated circuit for power supply control according to claim 1,

wherein the semiconductor integrated circuit generates and outputs a signal to dynamically control on-timings of a switching element for switching currents flowing through the primary coil in accordance with input voltages of the primary coil.

3. (Original) The semiconductor integrated circuit for power supply control according to claim 1,

wherein the semiconductor integrated circuit generates and outputs a signal to dynamically control on-timings of a switching element for switching currents flowing through the primary coil in accordance with load currents at the secondary side.

4. (Original) The semiconductor integrated circuit for power supply control according to claim 1,

wherein the semiconductor integrated circuit generates and outputs a signal to dynamically control on-timings of a switching element for switching currents flowing through the primary coil in accordance with input voltages of the primary coil and load currents at the secondary side.

5. (Original) The semiconductor integrated circuit for power supply control according to claim 1,

wherein the semiconductor integrated circuit generates and outputs a control signal by turning on or off a first synchronous rectification transistor and a second synchronous rectification transistor,

the first synchronous rectification transistor being connected between one terminal of the secondary coil and a reference potential point and turned on or off in synchronization with a switching operation for switching currents flowing through the primary coil, and

the second synchronous rectification transistor being connected between the other terminal of the secondary coil and the reference potential point and turned on or off in synchronization with the switching operation at the primary side.

6. (Previously Presented) A semiconductor integrated circuit for power supply control for performing switching control of a switching power supply device which switches currents flowing through a primary coil of a transformer for voltage conversion to drive the primary coil with alternate currents and rectifies currents flowing through a secondary coil of the transformer to output DC voltages, comprising:

a first control signal generation circuit to generate a control signal used for switching currents flowing through the primary coil;

a second control signal generation circuit to generate control signals for the first and second synchronous rectification transistors at the secondary side based on a signal generated by the first control signal generation circuit;

a variable delay circuit capable of supplying any delay to control signals generated by the first and second control signal generation circuits;

an external terminal to input setup information for specifying a delay amount supplied by the variable delay circuit;

a delay amount control circuit to generate, based on setup information from the external terminal, a signal for controlling a delay amount in the variable delay

circuit; and

a nullification means for nullifying delay amount control by the delay amount control circuit,

wherein the semiconductor integrated circuit generates and outputs a signal for dynamically controlling off-timings of a transistor for synchronous rectification at the secondary coil in accordance with at least one of an input voltage of the primary coil and a load current of the secondary coil,

the semiconductor integrated circuit generates and outputs a control signal by turning on or off a first synchronous rectification transistor and a second synchronous rectification transistor,

the first synchronous rectification transistor being connected between one terminal of the secondary coil and a reference potential point and turned on or off in synchronization with a switching operation for switching currents flowing through the primary coil,

the second synchronous rectification transistor being connected between the other terminal of the secondary coil and the reference potential point and turned on or off in synchronization with the switching operation at the primary side, and

the nullification means nullifies operations of the delay amount control circuit in accordance with a state of the external terminal.

7. (Original) The semiconductor integrated circuit for power supply control according to claim 6, comprising:

a detection means for detecting whether or not the load current goes below a specified value,

wherein, when the load current goes below a specified value, the variable delay circuit is changed to supply no delay to off-timings of the control signal for the first and second synchronous rectification transistors.

8. (Original) The semiconductor integrated circuit for power supply control according to claim 1, comprising:

a voltage monitoring means for detecting a level of the primary input voltage and, when the input voltage reaches a specified level, stops supplying power to an internal circuit,

wherein an input terminal for voltages monitored by the voltage monitoring

means is also used as an input terminal for voltages of the primary coil which is monitored to control on-timings of the switching element for switching currents flowing through the primary coil.

9. (Original) The semiconductor integrated circuit for power supply control according to claim 6,

wherein information about load currents input to the first control signal generation circuit and information about load currents input to the delay amount control circuit are input from the same external terminal.

10. (Currently Amended) A semiconductor integrated circuit for power supply control for performing switching control of a switching power supply device which switches currents flowing through a primary coil of a transformer for voltage conversion to drive the primary coil with alternate currents and rectifies currents flowing through a secondary coil of the transformer to output DC voltages,

wherein the semiconductor integrated circuit is configured to selectively set any detection criterion level for a circuit to generate a signal which detects a voltage between terminals of a switching element in a circuit for switching currents flowing through the primary coil and controls on-timings of the switching element at time points when a terminal voltage of the primary coil becomes minimum so as to minimize switching power losses.

timings of said switching currents are variably delayed at delay amounts by a variable delay circuit, and

said delay amounts are generated by a delay amount control circuit based upon setup information.

11. (Currently Amended) A switching power supply device comprising:

a semiconductor integrated circuit for power supply control for performing switching control of a switching power supply device which switches currents flowing through a primary coil of a transformer for voltage conversion to drive the primary coil with alternate currents and rectifies currents flowing through a secondary coil of the transformer to output DC voltages, wherein the semiconductor integrated circuit generates and outputs a signal for dynamically controlling off-timings of a transistor for synchronous rectification at the secondary coil in accordance with at

least one of an input voltage of the primary coil and a load current of the secondary coil to turn off the transistor immediately before inverting a current direction flowing through the primary coil so as to minimize switching power losses.

a transformer for voltage conversion;

a switching circuit which switches currents flowing through the primary coil of the transformer for voltage conversion to drive the primary coil with alternate currents;

a rectifier circuit including a synchronous rectification transistor and rectifies currents flowing through a secondary coil to output DC voltages, the synchronous rectification transistor being connected between one terminal of the secondary coil of the transformer for voltage conversion and a reference potential terminal and turned on or off in synchronization with switching operations of the switching circuit; [[and]]

a capacitor element for smoothing voltages rectified by the rectifier circuit;

a variable delay circuit variably delaying timings of said currents flowing through the primary coil of the transformer by delay amounts; and

a delay amount control circuit generating said delay amounts based upon setup information,

wherein an input voltage to the primary coil is divided by resistors and is supplied to the semiconductor integrated circuit for power supply control.

12. (Previously Presented) A switching power supply device according to claim 11,

wherein the semiconductor integrated circuit generates and outputs a signal to dynamically control on-timings of a switching element for switching currents flowing through the primary coil in accordance with input voltages of the primary coil.

13. (Previously Presented) A switching power supply device according to claim 11,

wherein the semiconductor integrated circuit generates and outputs a signal to dynamically control on-timings of a switching element for switching currents flowing through the primary coil in accordance with load currents at the secondary side.

14. (Previously Presented) A switching power supply device according to claim 11,

wherein the semiconductor integrated circuit generates and outputs a signal to dynamically control on-timings of a switching element for switching currents flowing through the primary coil in accordance with input voltages of the primary coil and

load currents at the secondary side.

15. (Previously Presented) A switching power supply device according to claim 11,

wherein the semiconductor integrated circuit generates and outputs a control signal by turning on or off a first synchronous rectification transistor and a second synchronous rectification transistor,

the first synchronous rectification transistor being connected between one terminal of the secondary coil and a reference potential point and turned on or off in synchronization with a switching operation for switching currents flowing through the primary coil, and

the second synchronous rectification transistor being connected between the other terminal of the secondary coil and the reference potential point and turned on or off in synchronization with the switching operation at the primary side.

16. (Previously Presented) A switching power supply device, comprising:

a semiconductor integrated circuit for power supply control for performing switching control of a switching power supply device which switches currents flowing through a primary coil of a transformer for voltage conversion to drive the primary coil with alternate currents and rectifies currents flowing through a secondary coil of the transformer to output DC voltages, wherein the semiconductor integrated circuit generates and outputs a signal for dynamically controlling off-timings of a transistor for synchronous rectification at the secondary coil in accordance with at least one of an input voltage of the primary coil and a load current of the secondary coil;

a transformer for voltage conversion;

a switching circuit which switches currents flowing through the primary coil of the transformer for voltage conversion to drive the primary coil with alternate currents;

a rectifier circuit including a synchronous rectification transistor and rectifies currents flowing through a secondary coil to output DC voltages, the synchronous rectification transistor being connected between one terminal of the secondary coil of the transformer for voltage conversion and a reference potential terminal and turned on or off in synchronization with switching operations of the switching circuit;

a capacitor element for smoothing voltages rectified by the rectifier circuit;

a first control signal generation circuit to generate a control signal used for switching currents flowing through the primary coil;

a second control signal generation circuit to generate control signals for the first and second synchronous rectification transistors at the secondary side based on a signal generated by the first control signal generation circuit;

a variable delay circuit capable of supplying any delay to control signals generated by the first and second control signal generation circuits;

an external terminal to input setup information for specifying a delay amount supplied by the variable delay circuit;

a delay amount control circuit to generate, based on setup information from the external terminal, a signal for controlling a delay amount in the variable delay circuit; and

a nullification means for nullifying delay amount control by the delay amount control circuit,

wherein an input voltage to the primary coil is divided by resistors and is supplied to the semiconductor integrated circuit for power supply control, and

the nullification means nullifies operations of the delay amount control circuit in accordance with a state of the external terminal.

17. (Previously Presented) A switching power supply device according to claim 11,

a detection means for detecting whether or not the load current goes below a specified value,

wherein, when the load current goes below a specified value, the variable delay circuit is changed to supply no delay to off-timings of the control signal for the first and second synchronous rectification transistors.

18. (Previously Presented) A switching power supply device according to claim 11,

a voltage monitoring means for detecting a level of the primary input voltage and, when the input voltage reaches a specified level, stops supplying power to an internal circuit,

wherein an input terminal for voltages monitored by the voltage monitoring means is also used as an input terminal for voltages of the primary coil which is monitored to control on-timings of the switching element for switching currents flowing through the primary coil.

19. (Previously Presented) A switching power supply device according to claim 11,

wherein information about load currents input to the first control signal generation circuit and information about load currents input to the delay amount control circuit are input from the same external terminal.

20. (Previously Presented) A switching power supply device according to claim 11,

wherein the semiconductor integrated circuit is configured to be able to set any detection criterion level for a circuit to generate a signal which detects a voltage between terminals of a switching element in a circuit for switching currents flowing through the primary coil and controls on-timings.

21. (New) The semiconductor integrated circuit for power supply control according to claim 1, wherein said delay amounts are nullified by a nullification means.

22. (New) The semiconductor integrated circuit for power supply control according to claim 10, wherein said delay amounts are nullified by a nullification means.

23. (New) The switching power supply device according to claim 11, further comprising a nullification means for nullifying said delay amounts.